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## We Claim:

- 1. An expression system for delivering a recombinant protein to an egg comprising (i) a first DNA sequence encoding the recombinant protein and (ii) a second DNA sequence which can facilitate the delivery of the protein to an egg of an animal.
- 2. An expression system according to claim 1 wherein the second DNA sequence encodes a protein or peptide which can bind to an egg.
- 3. An expression system according to claim 2 wherein the second DNA sequence encodes a portion of an immunoglobulin protein that can bind to the egg.
  - 4. An expression system according to claim 3 wherein the portion of the immunoglobulin is from the CH2-CH3 region of the Fc domain of the immunoglobulin.
- 5. An expression system according to claim 3 wherein the portion of the immunoglobulin binds to the Fc receptor on the egg.
  - 6. An expression system according to claim 5 wherein the Fc receptor is the avian Fc receptor neonate.
- 7. An expression system for delivering a recombinant antibody to an egg comprising (i) a first DNA sequence encoding an immunoglobulin constant region (ii) a second DNA sequence encoding an immunoglobulin variable region and (iii) a regulatory region sufficient to provide for expression of the antibody.
  - 8. An expression system according to claim 7 wherein the constant region is derived from a human immunoglobulin gene.

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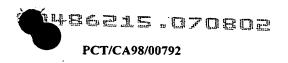
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- 15 11. A method of preparing a recombinant protein in an egg comprising:
  - introducing a transformed avian cell line that secretes a recombinant protein into an egg-laying animal wherein the avian cell line has been transformed with an expression system according to any one of claims 1 to 6;
  - obtaining an egg containing the recombinant protein; and optionally
    - isolating the recombinant protein from the egg.
- 12. A method of preparing a recombinant antibody in a fowl egg 25 comprising:
  - introducing a transformed avian cell line that secretes a recombinant antibody into an egg-laying fowl wherein the avian cell line has been transformed with an expression system according to claim 7 or 8;



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- b) obtaining an egg containing the recombinant antibody; and optionally
  - c) isolating the recombinant antibody from the egg.
- 13. A method of preparing an egg that is free of a pathogen comprising:
  - (a) introducing an antibody specific for the pathogen into an egg-laying animal; and
  - (b) allowing the animal to lay an egg wherein the egg is substantially free of the pathogen.
- 10 14. An egg containing a recombinant protein.
  - 15. An egg containing a recombinant protein produced according to the method of claim 9.
  - 16. An egg containing a recombinant antibody.
- 17. An egg containing a recombinant antibody produced according to the method of claim 10.
  - 18. A method of immunizing an animal comprising administering a therapeutically effective amount of an egg according to claim 16 or 17.
- 19. A transformed avian cell line that secretes a recombinant 20 antibody.

20. A transgenic egg-laying animal whose germ line cells and somatic cells contain an expression system comprising (i) a first DNA sequence encoding a recombinant protein operably linked to (ii) a second



DNA sequence that facilitates the delivery of the recombinant protein to the

A transgenic egg-laying animal whose germ line cells and somatic cells contain an expression system comprising (i) a first DNA sequence encoding an immunoglobulin constant region and (ii) a second DNA sequence excoding an immunoglobulin variable region.

- A method of producing a recombinant protein in an egg of an egg-laying animal comprising:
- (a) preparing a transgenic egg-laying animal whose somatic and germ line cells contain an expression system comprising (i) a first DNA 10 sequence encoding a recombinant protein operably linked to (ii) a second DNA sequence that/facilitates the delivery of the recombinant protein to the egg;

(b) obtaining an egg from the animal; and

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- pptionally, isolating the recombinant protein from the egg.
- 23. A method according to claim 22 wherein the second DNA encodes a portion of an immunoglobulin that can bind to the egg.
- 24. A method according to claim 23 wherein the portion of the immunoglobulin is from the CH2-CH3 region of the constant region 20 domain of the immunoglobulin.
  - 25. A method according to claim 23 wherein the portion of the immunoglobulin binds to the Fc receptor on the egg.
  - 26. A method according to claim 23 wherein the Fc receptor is the avian Fc receptor neonate.

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A method for preparing a recombinant antibody in an egg of an egg-laying animal comprising:

(a) preparing a transgenic egg-laying animal whose somatic and germ line cells contain an expression system comprising (i) a first DNA sequence encoding an immunoglobulin constant region (ii) a second DNA sequence encoding an immunoglobulin variable region and (iii) a regulatory region sufficient to provide for expression of the antibody; and (b) obtaining an egg from the animal.

A method according to claim 27 wherein the constant region is derived from a human gene.

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